

High-Energy Neutrinos

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Table Questions:

- What needs to be done for European neutrino observatory to catch up with IceCube?
- What is the way to detect EHE neutrinos?
- What is in the ECFA detector R&D roadmap for HE neutrinos?
- How many HE neutrino observatories would ideally be needed globally?

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Sky coverage requires at least 1 Northern and 1 Southern telescope - Unanimous!

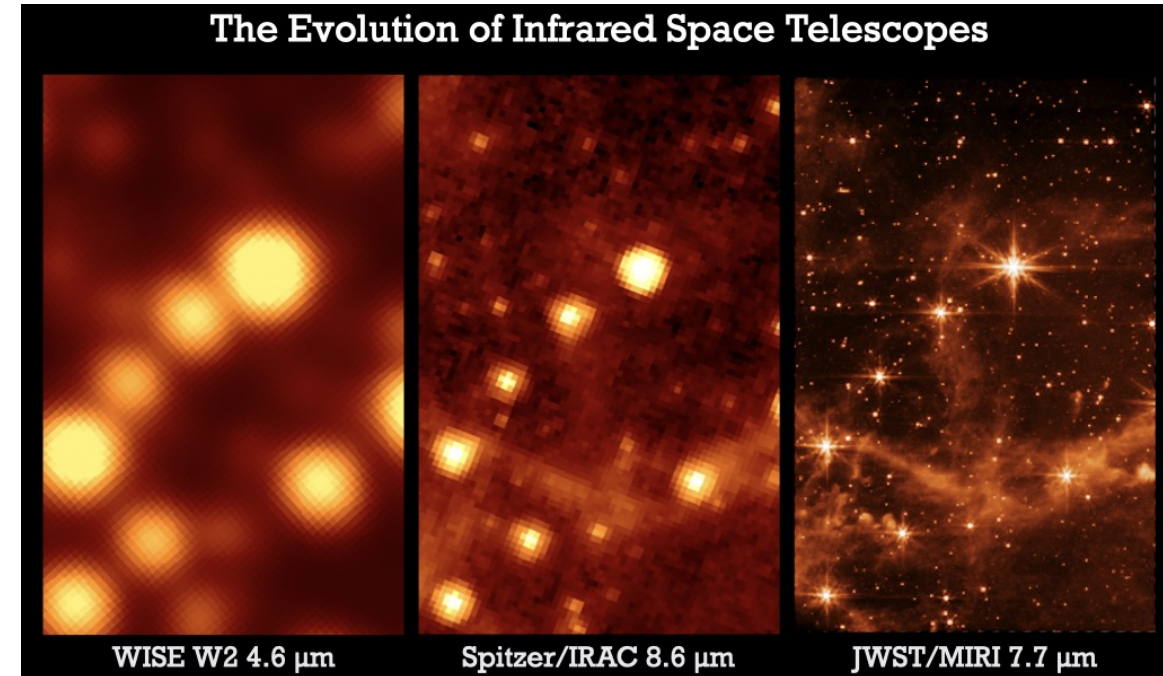
Rapid transients (< 1 day) = strong case for > 2 telescopes for full, continuous coverage, but not seen yet in neutrinos

Besides more exposure, multiple HEN telescopes can provide complementarity in other ways beyond sky coverage, mainly via how their design is optimized, for example:

- Different energy ranges (esp. < 100 TeV vs. > 100 TeV)
- Track vs cascade event types
- Point sources vs. Energy Spectrum vs. Flavor measurements
- Greater exposure vs. Better angular resolution vs. Low background

Some prioritization emerges naturally:

- Exposure more important than ang. res. at first => must be big enough to get events
- For sources, importance of angular resolution grows as the field develops:
 - better pointing = more significance
 - confident source association / identification
 - usefulness of neutrino alerts to astronomical community



Andras Gaspar

More general question of priorities and need for complementarity

(e.g. Energy ranges, sources vs spectrum vs flavor)

could be Global Neutrino Network (GNN) and/or APPEC led effort to organize a review

How many HE observatories would ideally be needed globally?

Did not reach a definitive answer.

Most discussed in this topic was the P-ONE telescope proposed for North Pacific.

(Worth noting that China proposes multi-km³ observatory at site in South China Sea)

APPEC document is intended to provide coherent strategy to present to funding agencies.

However, even though document is intended to guide European funding strategy, it is a worldwide document, and can be read in other communities as scientific endorsement or lack thereof. Completeness+Transparency about purpose and prioritization will help this.

For P-ONE, it can be clarified that it is in a demonstration phase, thus not requiring the coordination of European funding as required e.g. by KM3NeT now

Additional Questions / Points

Strengthening connection to astronomy / other communities:

- desire for more standardization of MM alerts
- faster release of public data sets
 - keep working in this direction,
it becomes more feasible after high-confidence detections firmly made
- larger role for citizen science (via data releases / algorithm challenges)